



VT300 Weighbridge Indicator User's Guide



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This warranty constitutes the full understanding between the manufacturer and buyer, and no terms, conditions, understanding or agreement purporting to modify or vary the terms hereof shall be binding unless hereafter made in writing and signed by an authorized official of Vishay Transducers.

Safety Instructions

The following instructions serve as a general guide for the safe operation of the VT300. This User's Manual is intended for users of the indicator, who are prohibited from installing, calibrating, setting up or servicing the product. Only qualified and authorized service personnel should install the product, set it up, calibrate it, or carry out adjustment, maintenance or repairs.

Safety Symbols



This symbol indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present even when the product is powered off or a fuse is blown.

Before working on equipment connected to power lines or to other devices, remove jewelry or any other metallic object that may come into contact with energized parts.

The product is intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. The earth lug provided on the product should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider.

Always make the ground connection first and disconnect it last. Do not connect data cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Special Safety Warnings



Welding on or in the vicinity of the equipment is strictly prohibited.



Use reliable lightening conductors to prevent static loads caused by thunderstorms.

Connection of AC Mains

Make sure that the electrical installation complies with local codes. Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Always connect the power cord first to the equipment and then to the wall socket. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building.

Operating Environment

Ambient Temperature	Storage temperature: -10C to +70C (14F to 158F). Operating temperature: -10C to +40C (14F to 104F).
Humidity	40% to 90% RH (non condensing).
Vibration	Severe vibration can affect the accuracy of weighing and damage components.
Air	The air surrounding the product should be dust-free and should not contain corrosive gasses or other materials that could adversely effect the product.
Electromagnetic Fields	Heavy electrical equipment should not be installed near to the weighing apparatus.
Incoming and Outgoing Signals	Relays and contacts connected to the equipment must have reliable and effective interference suppression. This also applies to other equipment within 3 meters of the equipment.

Declaration of Conformity

Non-Automatic Weighing Instrument (III)

Manufacturer	Vishay Transducers
Type / Model	VT300
EC Type Approval Certificate Number	DK 0199.62

Corresponds to the production model described in the EC Type Approval Certificate and to the requirements of the Council Directive 90/384/EEC as amended and to the requirements of the following EC Directives:

EN 45501:1994, The Metrological Aspects of Non-Automatic Weighing Machines.

EN 55022:1987, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.

EN 60950:1992, Safety of Information Technology Equipment.

Date	April 30, 2004
Signature	Benny Shaya, Director R&D/Operations Instruments Being the responsible person employed and appointed by Vishay Transducers.

About this Document

This document explains how to use the VT300 Weight Indicator. It is intended for users who perform weighing and related operations themselves. Before starting to operate the VT300, make sure it has been connected to the mains and to a scale, and properly set up, by a certified technician.

- For information on how to install, setup, upgrade and service these products, see the *VT300 Technical Manual*.
- Following this section is a *Quick Start Guide* that provides a brief overview of the VT300's main functions.

Chapters and Their Contents

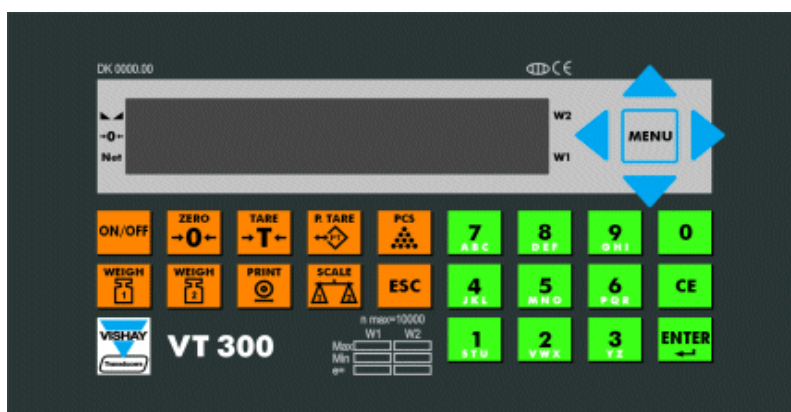
1	Introduction	An overview of VT300 features and how the indicator works.	Pg. 15
2	Using the Display and Keys	VT300 display and the functions of different keys.	Pg. 18
3	Zeroing and Taring	How to zero and tare the scale.	Pg. 23
4	Weighing Mode	How to use VT300 to weigh items.	Pg. 26
5	Weighing Vehicles	How to use VT300 to weigh trucks with known or unknown weight.	Pg. 29
6	Counting Mode	How to use VT300 to count units.	Pg. 33
7	Printing	How to use VT300 to print weight measurements.	Pg. 35
8	Alibi Memory Functions	Gives details of how to use the alibi memory functions.	Pg. 38
9	Working With the V-File	How to store and manage vehicle tare values and other vehicle-related information.	Pg. 40
10	Communicating With External Devices	How to communicate with a host PC, a printer and a remote display over VT300's two serial connections.	Pg. 44
11	Setpoints and Digital Input	Technical specification for VT300's setpoints and digital input, and how to define setpoints.	Pg. 50
12	Errors and Troubleshooting	Errors displayed by the indicator and how to resolve each problem.	Pg. 52

Style Conventions

Verdana	Regular text.
Arial Bold	Commands, keys and other parts of the user interface.
<i>Arial Italics</i>	Names of classes, methods, arguments, exceptions, properties, etc. Also used for special terms, the first time they appear.
Monospace	Text displayed on the LCD or on a computer attached to the product.
	Notes , which offer an additional explanation or a hint on how to overcome a common problem.
	Warnings , which indicate potential safety hazards regarding product operation or maintenance to operator or service personnel.

Quick Start Guide

Front Panel



Keys



Press to zero the scale*. Only works within the zero range.



Press once to tare the scale*. Press again to view gross weight.



Press to enter a preset tare. Enter the tare value using the alphanumeric keypad and press **ENTER**. The display shows net weight. To cancel and view gross weight, press **ESC**.



When you press this key, the current weight* is printed to the printer, output to an attached computer, and added to the accumulated *total*.



Press to switch between Weighing Mode and Counting Mode.



Press to turn the indicator on, or to switch it off when it is running.



Press to perform a first weighing of a vehicle with unknown tare.



Press to weigh a vehicle with known tare, or to perform a second weighing of a vehicle with unknown tare.



Toggles between scale 1, scale 2 and the sum of both scales (if two scales are connected to the indicator).



Enters the menu. The arrows around this button allow you to navigate the menu

Keys (cont.)

Quick Start Guide



Cancels the current operation, exits a menu or exits a mode.



Clears the characters entered



Confirms the current operation or the information entered.

* If the scale is not stable, the current weight cannot be used for this operation.

Status Annunciators

At the left of the display are several icons. A dot shows up next to these to indicate the current status of the scale or indicator.

	Stable	Active – the scale is stable (necessary for ZERO , T and PRINT). Inactive – the scale is not stable.
	Center of Zero	Active – the current weight is at center of zero (or at manual zero). Inactive – the scale is above or below center of zero.
	Net Weight	Active – the display is showing net weight. Inactive – the display is showing gross weight.
S1	Scale 1	Appears on the right of the display to show that the indicator is set to scale 1.
S2	Scale 2	Appears on the right of the display to show that the indicator is set to scale 2.
S0	Sum of scales	Appears on the right of the display to show that the indicator is displaying the sum of the weight on scales 1 and 2.
W1		The scale is currently in weight range 1.
W2		The scale is currently in weight range 2.

* These are not relevant if you only have one scale connected to the indicator.

Common Operations

Taring the scale	Place the empty package on the scale and wait for it to become stable (becomes active). Press T ().
Preset tare	Press P.TARE (). Enter a preset tare, then press ENTER .
Weighing an item	Tare the scale if necessary, then move the item onto the scale. Wait for it to become stable (becomes active). The weight appears on the display.
Counting units by weight	Switch to Counting Mode by pressing PCS (). Tare the scale if necessary, then move the item onto the scale. Wait for it to become stable (becomes active). The number of units appears on the display.
Printing current weight	Press PRINT (). If a printer is connected to the indicator, details of the current weighing print out. The weight is also added to the total.

1 Introduction



VT300 is an industrial weight indicator, which connects to either one or two scales and allows you to:

- Zero or tare the scale (see chapter 3)
- View an item's weight (see chapter 4)
- Weigh trucks, taring the scale from memory or by weighing twice (see chapter 5)
- Count large numbers of items that weigh the same (see chapter 6)
- Print weight measurements (see chapter 7)
- Save measurements in memory and recall them later (see chapter 8)
- Enter vehicle tare values and data into a vehicle file, or V-File (see chapter 9)
- Communicate with external devices over a serial connection (see chapter 10)
- Define thresholds for two analog setpoints and tilt settings for an analog input (see chapter 11)



Before starting to operate VT300, make sure it has been connected to the mains, connected to at least one working scale, calibrated and properly set up. These operations should only be carried out by an authorized technician. For information see the *VT300 Technical Manual*.

1.1 How it Works

A weight indicator is a central component of an industrial weighing system. It receives weight information from a scale; interprets this information, manipulates it and displays it; and can then pass it on to peripheral devices, most commonly printers or personal computers.

1.1.1 Receiving Input from a Scale

A scale is designed to send out an electrical signal when weight is applied to its weighing platform. The heavier the item being weighed, the stronger the signal. An indicator like VT300 receives this signal and uses it to calculate the weight of the item. To do this, it must be connected to the scale and properly calibrated.

Calibration, which may only be performed by authorized technicians, tells the indicator the minimum and maximum weight the scale can handle, and the corresponding electrical signal for each of these extremes. This allows the indicator to translate an electrical measurement into actual weight in kilograms or pounds.

1.1.2 Displaying and Manipulating Weight Information

The basic operation of VT300 is to display the weight of the item that is currently on the platform. This information can be saved to non-volatile memory called *Alibi Memory*, and retrieved later.

If you provide more information, VT300 can do more than just display the current weight. It can deduct the weight of the container (taring); calculate the number of units being weighed; and calculate an average weight for the units being weighed.

1.1.3 Sending Output to Other Devices

In addition to showing and manipulating weight information, VT300 can send it to other devices using its two serial ports. In a typical setup, the indicator is connected to a printer, allowing you to print out weight information in several formats.

It is also possible to connect the indicator to a personal computer, which allows more powerful data processing, or to an external display, which allows weight information to be viewed in a larger format or at a distance from the indicator itself.

VT300 also has two analog setpoints, with corresponding weight thresholds. When the item being weighed exceeds one of these thresholds, the relevant setpoint can trigger an event in your production process.

Only authorized technicians may connect the indicator to external devices such as the ones listed above.

1.2 Product Features

- High accuracy analog-to-digital converter (max 550,000 internal counts).
- Front panel with 16 character (14.5mm height) LCD display module.
- 27-key membrane keyboard with tactile feedback.
- 32 KB Flash RAM, real-time clock and non-volatile memory for system parameters and calibration data.
- Flash memory storing up to 10,000 weights (electronic tally roll or Alibi memory).

- 2 serial ports (RS232C or RS485A) for connection to printers, computers and remote displays.
- 2 setpoints, 24VDC/100mA optoisolated, and 1 optoisolated input.
- Four programmable print formats are available.
- Weighing file stores up to 250 first-weighing or fixed-tare weights, date and time, serial number and two reference codes.
- Unit counting feature with selectable sample size.
- Both printer and host PC interface can be active at the same time.

1.2.1 Options

Second scale input	Scale input board
Analog output	0/4 - 20mA or 0-10V, 16 bits resolution. Powered by an external 24VDC.
RS485 serial port adapter	Used for bi-directional communication with a PC
Rechargeable battery	For stand-alone operation. Only available for aluminum enclosure

1.2.2 Wiring

Use load cell cable 6 x 0,5 mm² shielded for the sensor. Use 3 x 0,34 mm² shielded for RS232C connection, and 2x0,34 mm² shielded twisted pair for RS485 connection.

All connections to the instrument are made through the rear panel connectors. The shield should be connected to the metal frame of the connector.

1.2.3 Power

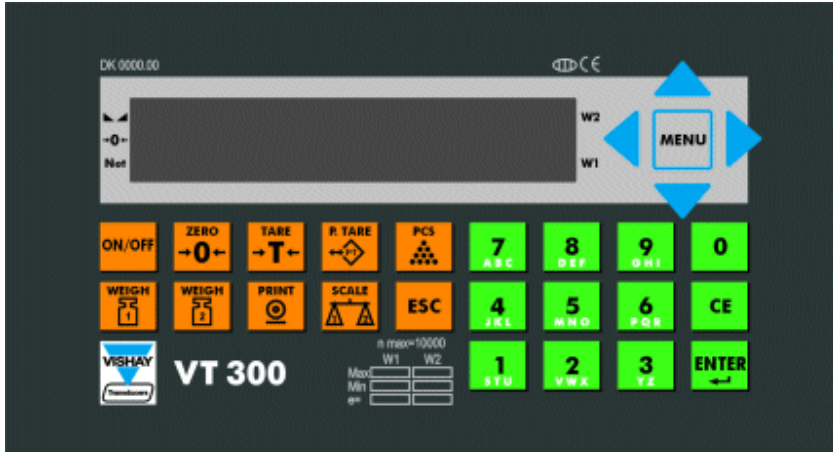
The instrument is powered from mains 80-250VAC, or from a rechargeable battery (available only for aluminum enclosure option). Power supplied should come from a source that is isolated from other process equipment.

1.3 Startup Sequence

Press the **ON/OFF** key () to turn on the VT300. The following steps should then take place automatically.

#	Description of Step	Display Shows (e.g.)
1	Software ID is displayed briefly	XXXXXX
2	Date of issue of current software version is displayed briefly.	XXXXXX
3	The scale attempts to zero automatically.	ZERO SCALE
4	If current weight is within zero range, the scale zeroes; if not, Error 15 is displayed. To continue, unload the scale and press ESC .	ZERO SCALE or E15: PWRUP ZERO
5	Current weight is shown	000.0

2 Using the Display and Keys



The VT300 front panel can be divided into four areas:

- A sixteen-character dot matrix display shows weight information, status information, and the names of menus and functions.
- The function keypad, with ten orange keys, allows you to turn the unit on and off and perform the most common operations.
- A navigation area (to the right of the display) allows you to access and navigate the menu, which contains more advanced operations.
- An alphanumeric keypad, with 12 green keys, allows you to enter numbers and letters.

2.1 Understanding the VT300 Display

The VT300 has an LCD display. There are three status annunciators on the left of the display and two more on the right of the display. Small dots (*status annunciators*) may appear next to one or more of these, to show status information such as whether the scale has been tared or not.

2.1.1 Status Annunciators

At the left of the display are several icons. A dot shows up next to these to indicate the current status of the scale or indicator. Status annunciators are often important to understand what is being shown on the display.

	Stable	Active – the scale is stable (necessary for ZERO , T and PRINT). Inactive – the scale is not stable.
	Center of Zero	Active – the current weight is at center of zero (or at manual zero). Inactive – the scale is above or below center of zero.
	Net Weight	Active – the display is showing net weight. Inactive – the display is showing gross weight.
S1	Scale 1	Appears on the right of the display to show that the indicator is set to scale 1.
S2	Scale 2	Appears on the right of the display to show that the indicator is set to scale 2.
S0	Sum of scales	Appears on the right of the display to show that the indicator is displaying the sum of the weight on scales 1 and 2.
W1		The scale is currently in weight range 1.
W2		The scale is currently in weight range 2.

2.1.2 Common Messages Shown on the Display

Message Type	Meaning
352.0	Weight of the item on the scale.
24509	Approximate number of units on the scale.
319.0 ( active)	Net weight , or number of units calculated after subtracting the container's weight.
nnnnnn	Over range. The item on the scale weighs more than the maximum capacity of the scale, or the load cell signal is too high.
UUUUUU	Under range. The item on the scale weighs less than the minimum capacity of the scale, or the load cell signal is too low.
E15: PWRUP ZERO	An error has occurred (see chapter 12). In some cases, you can ignore the error and continue working by pressing ESC .
XXXXXX	Software model number , shown during the power-up sequence.
XXXXXX	Software version issue date , shown during the power-up sequence.
ZERO SCALE	Automatic zeroing , performed at the end of the power-up sequence.

Other types of messages may be shown when you perform specific operations, such as editing the tare value or displaying battery status.

2.2 Front Panel Keys

The keys on the VT300 front panel can serve two functions:

- Performing common operations and accessing the menu.
- Entering alphanumeric information.

2.2.1 Using Keys to Perform Operations

Key	Description	Related operations	Refer to
	Press to zero the scale*. Only works within the zero range.	Manual zeroing	Chapter 3.1
	Press once to tare the scale*. Press again to view gross weight.	Taring using current weight	Chapter 3.2
	Press to enter a preset tare. Enter the tare value using the alphanumeric keypad and press ENTER . The display shows net weight. To cancel and view gross weight, press ESC .	Preset tare	Chapter 3.3
	When you press this key, the current weight* is printed to the printer, output to an attached computer, and added to the accumulated <i>total</i> .	Printing	Chapter 7.1
	Press to switch between Weighing Mode and Counting Mode.	Counting pieces, weighing	Chapters 4, 6
	Press to turn the indicator on, or to switch it off when it is running.	Starting the indicator	
	Press to perform a first weighing of a vehicle with unknown tare.	Weighing, printing	Chapter 5.1.2
	Press to weigh a vehicle with known tare, or to perform a second weighing of a vehicle with unknown tare.	Weighing, printing	Chapter 5
	Toggles between scale 1, scale 2 and the sum of both scales (if two scales are connected to the indicator).		
	Enters the menu. The arrows around this button allow you to navigate the menu		Chapter 2.3
	Cancels the current operation, exits a menu or exits a mode.		

* If the scale is not stable, the current weight cannot be used for this operation.

2.2.2 Using Keys to Enter Information

Key	Description
0-9	Press a key to enter a digit. When you enter a second digit, the first digit moves to the left and the new digit takes its place. If you make a mistake, press CE to clear the display. Press a key twice or more, quickly, to toggle the letters assigned to that key. For example, to enter the letter 'b', press 7 / abc three times quickly (the first time shows the number 7). To enter 'c', press 7 / abc four times.
	Confirms the current operation or the information entered.
	Clears the characters entered.

2.3 The Menu

The menu, accessed by pressing the **MENU** key (), allows you to perform advanced operations like high-resolution weighing, printing and viewing alibi memory.

This subchapter explains how to use the menu and provides a summary of its functions. All operations are explained in more detail further in this document.

2.3.1 Using the Menu

➔ To access a function on the menu:

1. Press the **MENU** button, located to the right of the display.
2. Use the ▲ and ▼ arrows to scroll through the menu options.
3. Press **ENTER** to drill down into a submenu. You can then use the ▲ and ▼ arrows to scroll through the menu or submenu options.
4. Press **ESC** to return to a higher menu or submenu level.
5. When you reach the desired menu option, press **ENTER** to confirm.

2.3.2 Menu Structure and Options Summary

Main menu	Submenu contents	Description
WEIGH	PCS CNT	Switches to Counting Mode.
	SETP	Shows setpoint values and allows editing.
	COPY	Copies last weighing ticket.
	ALIBI (VIEW, PRINT, CSUM)	Alibi memory functions.

Using the Display and Keys

The Menu

Main menu	Submenu contents	Description
VFILE	PRINT (TARE, FIRST, ALL, SELECT)	Prints from V-File.
	EDIT TARE	Creates a new vehicle record.
	CSUM	Checks V-File memory.
	DEL (TARE, FIRST, ALL, SELECT)	Deletes V-File records.
	SIZE	Shows number of records stored in V-File, and space available.
TFILE	STOT	Subtotal of net weights. Press PRINT to print, CE to reset.
	TOTAL	Total of net weights. Press PRINT to print, CE to reset.
MISC	INFO	Displays indicator model and serial number.
	1OIML	Displays audit trail counter for scale 1.
	2OIML	Displays audit trail counter for scale 2.
	BATTERY	Displays remaining battery capacity as % of max capacity.
	HIGH RES	Increases the weight display resolution 10 times.
SYSTEM	DATE	Allows editing date, time and serial print number (user password protected).
	PIN (PIN SYS, PIN OPER)	Allows setting and changing user password.
	PRP	Shows weighing process parameters and allows editing (authorized technicians only).
	1CAL (PAR, ZERO, SPAN, INIT, WRITE)	Calibration menu for scale 1 (authorized technicians only).
	2CAL (PAR, ZERO, SPAN, INIT, WRITE)	Calibration menu for scale 2 (authorized technicians only).
	D/A CAL	Analog output calibration (authorized technicians only). 0-20mA, 0-10V.
	SET	Operational setup submenus.
	TEST	Hardware and software testing.

3 Zeroing and Taring

The VT300 allows you to adjust the scale by zeroing or taring.

- Zeroing adjusts the center of zero to match the current environmental conditions.
- Taring compensates for the weight of an item's container, by subtracting it from the weight measured.

3.1 Manual Zeroing

You only need to manually zero the scale if the display consistently shows a figure lower or higher than zero. This can happen, for example, when mud or other debris collects on the weighing platform. As long as this debris remains in place for the duration of the weighing session, you can zero the scale to compensate for it.

Zeroing only works if the current weight is within zero range (as defined during calibration).

➔ **To manually zero the scale:**

1. Clear the scale, wait for it to become stable (the  status annunciator becomes active), and check the weight.
 - If the weight is in the zero range, proceed to step 2.
 - If the weight is outside the zero range, no error is shown, but manual zero will not work. Try to reduce (or increase) the pressure on the scale.
 - If  is active (i.e. the scale is at center of zero), there is no need to zero it.
2. Press **ZERO** (). The current weight is set as the center of zero. The display shows ZERO briefly, and  becomes active.

3.2 Taring

You can tare the scale by taking a measurement of an item's empty container. This weight is then subtracted from the weight measured by the scale, to arrive at a net weight that is shown on the display. This is called *Net Mode*. You can exit Net Mode to go back to viewing gross weight.

If you know the weight of the container, you can tare the scale by entering this weight directly (preset tare; see chapter 3.3 below).

➔ **To tare the scale using the current weight:**

1. Check if the **NET** status annunciator is active.
 - If **NET** is active, you are already in Net Mode. If you want to exit Net Mode and tare the scale again, press **TARE** ()¹, then proceed to step 2.
 - If **NET** is not active, proceed directly to step 2.
2. Tare the scale. Wait for the scale to become stable ( becomes active).
3. Press **TARE** ()¹. **NET** becomes active.
4. Fill the empty container, or replace it with a full one.
 - If you are in Weighing Mode, the display shows the net weight of the item or items, excluding the weight of the container.
 - If you are in Counting Mode, the display shows the number of units derived from the net weight.
5. To return to Gross Weighing Mode press **ESC**. The display shows gross weight, or number of units derived from the gross weight.

3.3 Preset Tare

If you know the weight of the container you intend to place on the scale, you can tare by entering this weight directly. It is then subtracted from the weight measured by the scale, to arrive at a net weight which is shown on the display. This is called *Net Mode*. You can exit Net Mode to go back to viewing gross weight.

If you do not know the weight of the container, you can tare the scale by weighing it empty (see chapter 3.2 above).

➔ **To tare the scale by entering the current weight:**

1. Check if the **NET** status annunciator is active.
 - If **NET** is active, you are already in Net Mode. If you want to exit Net Mode and tare the scale again using a different weight, press **TARE** () , then proceed to step 2.
 - If **NET** is not active, proceed directly to step 2.
2. Press **P.TARE** () . 00.0000 is shown on the display, flashing.
3. Enter the weight of the container using the green keypad.
4. Press **ENTER**. **NET** becomes active.
5. Place a full container on the scale.
 - If you are in Weighing Mode, the display shows the net weight of the item or items, excluding the weight of container.
 - If you are in Counting Mode, the display shows the number of units derived from the net weight.
6. To return to Gross Weighing Mode, press **TARE** () . The display shows gross weight, or number of units derived from the gross weight.

3.4 Viewing Preset Tare Value

➔ **To view the current preset tare:**

Press **P.TARE** () . The preset tare value is displayed briefly.

4 Measuring Weight

VT300 can:

- Display the weight of the item on the weighing platform (see chapter 4.1 below).
- Display an item's weight in high resolution – ten times the precision certified for your scale (see chapter 4.2 below).
- Add the current weight measurement to an accumulated total (see chapter 4.3 below).



VT300 shows gross weight by default. If you need to see net weight, tare the scale before weighing.

4.1 Weighing an Item

➔ **To weigh an item:**

1. If the item you want to weigh is stored in a container, and you need to see its net weight, tare the scale (refer to chapter 3.2 if you don't know the weight of the container).
2. Place the item on the scale, and wait for it to become stable (the  status annunciator becomes active). The display shows the weight of the item.
3. To print the current measurement, using the currently-selected print format, press **PRINT** (.

4.2 High Resolution Weighing

You can temporarily increase the resolution of the weight display by a factor of ten, so that the indicator shows an additional digit on the right.

This high-resolution weight measurement is for your reference only. You cannot print it or use it for any legal transaction. To remind you of this, the weight display flashes when it is showing weight in high resolution.

➔ **To weigh an item with high resolution:**

1. Press **MENU** on the front panel.
2. Use the **▼** button to scroll to the **MISC** menu, then press **ENTER** to enter it.
3. Scroll to the **HIGH RES** option, and press **ENTER**.
4. Place the item on the scale, and wait for it to become stable (the  status annunciator becomes active). The display shows the weight of the item.

5. The display now shows the weight of the item in high resolution (i.e. with one more digit on the right).



While high resolution weighing is on, the display flashes to remind you that you cannot use high-resolution measurements for printing or for any legal transaction.

6. When you are done weighing in high resolution, press **ESC** several times to return to normal weight resolution.

4.3 Accumulated Total Weight

Every time you print a weight measurement and/or output it to the PC, the gross weight is added to an accumulated total.

You can use the accumulated weight to check how much was weighed on the scale in total, over a certain period (for example, one work-day or one month). To do this, you should reset the total (set it to zero) at the start of the period. At the end of the period, you can view the total, print it and reset it again.

Printing and clearing is performed in one operation. When you print the total, the accumulated total is reset to zero.

4.3.1 Adding a Measurement to the Total

➔ To add an item's weight to the accumulated total:

1. Weigh the item normally (see chapter 4.1 above). Make sure the scale is stable
2. Press **PRINT** ().

4.3.2 Viewing the Total

➔ To view and/or print the accumulated total:

1. Press **MENU**. Use the ▼ button to scroll to the **TFILE** submenu, and press **ENTER** to enter it.
2. Press the ▼ button to reach the **TOTAL** option, and press **ENTER**. The accumulated total of net weights is shown. For example, if you cleared the total and then measured three items, weighing 100kg, 600kg and 300kg respectively (net), the display would show 1000.
3. If you want to print the total, press **PRINT**. Otherwise, press **ESC**.

4.3.3 Resetting the Total

➔ To reset the accumulated total:

1. Press **MENU**. Use the ▼ button to scroll to the **TFILE** submenu, and press **ENTER** to enter it.
2. Press the ▼ button to reach the **TOTAL** option, and press **ENTER**. The accumulated total of net weights is shown.
3. Press **CE** to reset the total.

5 Weighing Vehicles

VT300 can be used to weigh trucks and other vehicles on a weighbridge. All weighing procedures begin after the vehicle has rolled onto the platform and the scale is stable. There are three procedures for weighing trucks. All the truck weighing procedures involve the V-File, or vehicle file, explained below.

5.1.1 The V-File

The V-File is an area of memory allocated in the indicator, which stores information about trucks and other vehicles. The following details are stored in the V-File:

- **Truck ID:** A unique identifier for the truck, usually the license plate number. Up to 16 characters in length.
- **Customer ID:** A unique identifier for the owner of the truck, usually a company name.
- **Product ID:** A description of the product the truck is carrying.
- **The tare value of the truck** (must be more than the minimum weighing capacity).



When entering information for trucks, always use the same Customer ID and Product ID for each customer and product.

For more details on working with the V-File, see chapter 9.

5.1.2 Weighing a Truck of Unknown Weight

This procedure is used to weigh a truck that is not stored in the V-File, and whose tare value (unloaded weight) is not known. To tare the scale, you weigh the truck twice: Once loaded, and once unloaded. The truck can be first weighed empty, and then weighed loaded with product, or vice versa.

➔ Weighing a truck of unknown weight:

1. Press **WEIGHT 1**. The indicator displays **VEHICLE** briefly, and then the cursor blinks.
2. Use the alphanumeric keypad to enter the truck ID (usually the plate number) and press **ENTER**. The indicator displays **CLIENT** briefly, and then the cursor blinks.
3. Use the alphanumeric keypad to enter the customer ID for the owner of the truck (usually a company name) and press **ENTER**. The Indicator displays **PRODUCT** briefly, and then the cursor blinks.
4. Use the alphanumeric keypad to enter a description of the product, and press **ENTER**. A first weighing ticket (shown below) is printed. The weight of the truck is retained in memory until it returns to be weighed a second time. Take note of the first weighing serial number in memory – this appears to the right of the vehicle ID (in the example below, MF:054).

Weighing Vehicles

Accumulated Total Weight

DATE:16-05-03 15:46 N:00125

1st WEIGHT :<15000>kg

VEHICLE : AB1234 MF:054

CLIENT : SMITH

PRODUCT : SAND BB



First weighing information is stored in the V-File, and can be accessed using the menu path **VFILE > PRINT > FIRST**.



When the truck rolls off the platform, other trucks can be weighed until the truck returns to be weighed a second time. If the truck was weighed with goods the first time, the second time it is weighed it should be empty. If the truck was first weighed empty, the second time it should be weighed loaded with product.

5. Once the truck returns to the weighbridge for a second weighing, press **WEIGHT 2**. The indicator displays **VEHICLE** briefly, and then the cursor blinks.
6. Use the alphanumeric keypad to enter the memory serial number of the first weighing (this appears on the first weighing ticket, to the right of the vehicle ID). Press **ENTER**. The indicator displays **CLIENT** briefly, and then the cursor blinks.
7. Use the alphanumeric keypad to enter the customer ID for the owner of the truck (usually a company name) and press **ENTER**. The Indicator displays **PRODUCT** briefly, and then the cursor blinks.
8. Use the alphanumeric keypad to enter a description of the product, and press **ENTER**. The second weighing ticket is printed out, in the format shown below. The net weight is an absolute value, calculated as the difference between the first and second weighing.

DATE:16-05-03 16:00 N:00126

1st WEIGHT :<15000>kg 16-05-03 15:46

2nd WEIGHT :<32000>kg 16-05-03

NET WEIGHT: 17000 kg

VEHICLE : AB1234 MF:054

CLIENT : SMITH

PRODUCT : SAND BB

5.1.3 Weighing a Truck Stored in the V-File

➔ To weigh a truck when its details are available in the V-File:

1. Press **WEIGHT 2**.
2. The indicator displays **VEHICLE** briefly, and then the cursor blinks. Use the alphanumeric keypad to enter the truck ID (usually the plate number) and press **ENTER**.

Alternatively, enter the truck's memory key (MF or MT) and press **ENTER**. The display shows **P.TARE 000000**. Type the truck's tare value and press **ENTER**.

3. The indicator displays **CLIENT** briefly, and then the cursor blinks. Use the alphanumeric keypad to enter the customer ID for the owner of the truck (usually a company name) and Press **ENTER**.
4. The indicator displays **PRODUCT** briefly, and then the cursor blinks. Enter the product ID (a description of the product the truck is carrying). Press **ENTER**. The indicator displays **STORE IN ALIBI**. The weight measurement is saved in memory, and a ticket is printed out with the following format:

```
DATE:16-05-03 16:00 N:00125

1st WEIGHT :<15000>kg 16-05-03 15:46

2nd WEIGHT :<32000>kg
NET WEIGHT: 17000 kg

VEHICLE   : AB1234      MF:054
CLIENT    : SMITH
PRODUCT   : SAND BB
```



Although the customer ID and product ID are stored in the memory, they have to be entered every time a truck is weighed. The only item that is retrieved from memory is the tare value of the truck.

5.1.4 Entering Preset Tare for a Truck

➔ To weigh a truck with a known tare, which is not stored in V-File:

1. Press **WEIGHT 2**. The indicator displays **VEHICLE** briefly, and then the cursor blinks.
2. Use the alphanumeric keypad to enter the truck ID (usually the plate number) and press **ENTER**. The indicator displays **P.TARE:00.000**.
3. Use the alphanumeric keypad to enter the tare value of the truck, and press **ENTER**. The indicator displays **CLIENT** briefly, and then the cursor blinks.
4. Use the alphanumeric keypad to enter the customer ID for the owner of the truck (usually a company name), and press **ENTER**. The Indicator displays **PRODUCT** briefly, and then the cursor blinks.

Weighing Vehicles

Accumulated Total Weight

5. Enter a description of the product the truck is carrying, and press **ENTER**. The indicator displays `STORE IN ALIBI`. The weight measurement is saved in memory, and a ticket is printed out with the following format:

```
DATE:16-05-03 15:46 N:00127  
1st WEIGHT :<15000>kg 00-00-00 00:00  
2nd WEIGHT :<32000>kg  
NET WEIGHT: 17000 kg  
VEHICLE : AB1234 MF 000  
CLIENT : SMITH  
PRODUCT : SAND BB
```



When you weigh a truck in this manner, it is not added to the V-File. To add it to the V-File, see chapter 9.

6 Counting Units

VT300 can count the number of units (pieces) on the weighing platform. This is done by dividing the total weight by a unit weight. For example, you can place a bucket of screws weighing 5kg on the scale. Given that each screw weighs 5g, the indicator calculates that the bucket contains 1000 screws.

You can enter unit weight in one of two ways:

- By weighing a sample of units and entering the number of units.
- By entering a preset unit weight. This method is recommended if you know the unit weight, or if the units are very small.



You should only count units if they all have the same weight. The smallest unit weight is limited to 1 display division.



You cannot print from Counting Mode. Counting mode cannot be used as a reference for any legal transaction.



By default, Counting Mode uses the gross weight to count units. If your units are stored in a container, it is essential that you tare the scale. Otherwise the container will be counted as additional units, and the indicator will display an inflated number.

6.1 Counting Units

➔ **To count units:**

1. Set a unit weight for counting, either by weighing a sample (see chapter 6.2) or by entering a preset weight (see chapter 6.3).
2. Switch to Counting Mode if necessary, by pressing **PCS**.
3. Place an unknown quantity of units on the scale, and wait for it to become stable. The display shows the number of units.

6.2 Using a Sample to Set Unit Weight

You can set a unit weight for counting by placing a sample of units on a scale (at least 10 display divisions), and entering the number of units. The indicator calculates the average weight of the sample, and sets this weight as the unit weight for counting.

➔ **To set unit weight using a sample:**

1. If the sample is stored in a container, first tare the scale (refer to chapter 3.2).
2. Place the sample on the scale. It may not contain more than 99 units.
3. Press **PCS** on the front panel.
4. Press **WEIGH 1**. The indicator displays **PIECES XX**.
5. Use the number keypad to enter the number of units in the sample, and press **ENTER**.

The indicator calculates the average weight and sets it as the unit weight for counting. The display should now show the number of units on the scale (the same number you entered earlier).

6.3 Entering Preset Unit Weight

You can enter a unit weight directly, instead of using a sample. This method is recommended if you know the unit weight (minimum 1 display division), or if the units are very small.

➔ **To enter a preset unit weight:**

1. Press **PCS** on the front panel.
2. Press **WEIGH 2**. The indicator displays **APW XXXXX**.
3. Use the number keypad to enter the unit weight, and press **ENTER**.

The preset weight you entered is set as the unit weight for counting.

7 Printing

VT300 allows you to print the current weight measurement and print historic measurements. The serial number of the printout can be included in each printout.

7.1 Printing the Current Measurement

➔ To print the current weight measurement to the printer:

1. Weigh the item normally (see chapter 4.1 above). Make sure the scale is stable
2. Press **PRINT** () . The current measurement is printed to the printer using the following format: 0100 001.000 kgG

7.1.1 Repeating the Last Printout (Producing a Copy)

➔ To produce a copy of the last printout:

1. Press **MENU** on the front panel. Press **ENTER** to enter the **WEIGH** submenu.
2. Scroll to the **COPY** option, and press **ENTER**. A copy of the last printout is printed.

7.2 Printing Historic Measurements

All weight measurements you print are stored in the alibi memory of the indicator. This is a fixed memory unit that stores up to 10,000 records. Only gross weight measurements are stored in alibi memory.

You can access the alibi memory and print historic measurements by referencing their serial numbers. The serial number of a measurement appears on its printed ticket. Alternatively, you can print the entire alibi memory.

➔ To print a specific record from the Alibi memory:

1. Press **MENU** on the front panel, and press **ENTER** to enter the **WEIGH** submenu.
2. Press the ▼ button to reach the **ALIBI** submenu. Press **ENTER** to enter the submenu.
3. Press the ▼ button to reach the **VIEW** option, and press **ENTER**. Alibi memory records are shown on the display.
4. Use the ▲ and ▼ buttons to scroll through the alibi memory records.
5. The display shows the record in the following format: N:0099 1.000 kg.
6. Press **PRINT** to print the record, together with the next nine records.

Printing

Printing from V-File

➔ To print the entire alibi memory:

1. Press **MENU** on the front panel, and press **ENTER** to enter the **WEIGH** submenu.
2. Press the ▼ button to reach the **ALIBI** submenu. Press **ENTER** to enter the submenu.



Before proceeding, make sure the printer has enough paper. The alibi memory may contain thousands of records, and you are about to print them all. However, you can stop the printing at any time.

3. Press the ▼ button to reach the **PRINT** option, and press **ENTER**. The alibi memory starts printing out in its entirety. To stop printing, press **ESC**.

7.3 Printing from V-File

A V-File, or vehicle file, contains details of trucks, including plate number, customer ID and tare value (unloaded weight).

7.3.1 Printing Truck Tare Values

➔ To print truck tare values for all trucks:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **PRINT** submenu. Press **ENTER** to enter the menu.
3. Use the ▼ button to scroll to the **TARE** option. Press **ENTER**. The printer starts printing all the tare values stored in the V-File, alongside the data of each truck.

7.3.2 Printing All First Weighings

A first weighing is performed when a truck is not stored in the V-File, and its unloaded weight is not known. Together with the second weighing, this allows you to tare the scale. First weighing data is not stored in the regular V-File records (because if a V-File ticket exists there is no need for a first weighing). This data is stored in a separate memory location, and you can print it if needed.

➔ To print all first weighings:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **FIRST** option. Press **ENTER**. The printer starts printing the weight measurements taken in all first weighings (one per line).

7.3.3 Printing the Entire V-File

This option allows you to print all the information for all the trucks stored in the V-File: truck ID, customer ID, product ID and tare value.

➔ **To print the entire V-File:**

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **PRINT** option. Press **ENTER** to enter the submenu.
3. Use the ▼ button to scroll to the **ALL** option.
4. Press **ENTER**. The printer starts printing all V-File tickets.



The serial number of a V-File record, which is printed on the ticket, reflects the status of the record. A serial number starting with MT indicates a full V-File record, with first and second weighing information. A serial number starting with MF indicates a first weighing only. A serial number starting with M@ indicates that the record is empty. The number following the two-letter status code indicates the record's position in memory.

7.3.4 Printing the V-File Record of a Specific Truck

➔ **To print a V-File record for a specific truck:**

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **PRINT** option, and press **ENTER**.
3. Use the ▼ button to scroll to the vehicle you need, and press **ENTER**. The indicator displays **VEHICLE** briefly, and the cursor blinks.
4. Use the alphanumeric keypad to enter the ID of the truck (usually its plate number), and press **ENTER**. The V-File record for the truck prints out.

8 Alibi Memory Functions

All weight measurements you print are stored in the alibi memory of the indicator. This is a fixed memory unit that stores up to 10,000 records. Only gross weight measurements are stored in alibi memory.

You can perform the following actions on the alibi memory:

- View or print historic measurements by referencing their serial numbers. The serial number of a measurement appears on its printed ticket.
- Print the entire alibi memory.
- Check the alibi memory for errors.

8.1 Viewing or Printing a Specific Historic Measurement

➔ To view/print an alibi memory record:

1. Press **MENU** on the front panel, and press **ENTER** to enter the **WEIGH** submenu.
2. Press the ▼ button to reach the **ALIBI** submenu. Press **ENTER** to enter the submenu.
3. Press the ▼ button to reach the **VIEW** option, and press **ENTER**. Alibi memory records are shown on the display.
4. Enter the record number, if you know it, and press **ENTER**. Alternatively, use the ▲ and ▼ buttons to scroll through the alibi memory records.
5. The display shows the record in the following format: N:0099 1.000 kg.
6. Press **PRINT** to print the record, together with the next nine records.

8.2 Printing all Historic Measurements

➔ To print the entire alibi memory:

1. Press **MENU** on the front panel, and press **ENTER** to enter the **WEIGH** submenu.
2. Press the ▼ button to reach the **ALIBI** submenu. Press **ENTER** to enter the submenu.



Before proceeding, make sure the printer has enough paper. The alibi memory may contain thousands of records, and you are about to print them all. However, you can stop the printing at any time.

3. Press the ▼ button to reach the **PRINT** option, and press **ENTER**. The alibi memory starts printing out in its entirety. To stop printing, press **ESC**.

8.3 Checking Alibi Memory for Errors

The alibi memory is sometimes used to record legal transactions, so it is important to make sure that it is in working order. This works by performing a checksum on each alibi memory record, to make sure it is not corrupted.

➔ **To check the alibi memory for errors:**

1. Press **MENU** on the front panel, and press **ENTER** to enter the **WEIGH** submenu.
2. Press the ▼ button to reach the **ALIBI** submenu. Press **ENTER** to enter the submenu.
3. Press the ▼ button to reach the **CSUM** option, and press **ENTER**. The indicator starts checking the alibi memory for errors. This can take a few minutes.
4. One of two messages is displayed:
 - **CHECKSUM OK** (displayed briefly). This means all alibi memory records are okay.
 - **E77:WM CHECKSUM**. This means that at least one record is corrupted.

9 Working with the V-File

The V-File is an area of memory allocated in the indicator, which stores vehicle information and first weighing information (250 records in total). The following details are stored in the V-File:

- Vehicle description: A unique identifier for the truck, usually the license plate number (max 16 chars).
- Client: A unique identifier for the owner of the truck (max. 16 chars).
- Product: A description of the product the truck is carrying (max. 16 chars).
- First weighing or preset tare of the vehicle.
- Date and time of the weighing.
- Serial number of the weighing.



The serial number of a V-File record, which is printed on the ticket, reflects the status of the record. A serial number starting with MT indicates a full V-File record, with first and second weighing information. A serial number starting with MF indicates a first weighing only. A serial number starting with M@ indicates that the record is empty. The number following the two-letter status code indicates the record's position in memory.

V-File Menu Options

- **EDIT TARE** - create a new truck.
- **PRINT** - print some or all V-File data from memory.
- **CSUM** - check errors in the V-File.
- **DELETE** - delete some or all V-File records.
- **SIZE** - check how many V-File records are used, and how many are available.

9.1 Adding a new vehicle

➔ To add a new vehicle to the V-File:

1. Press **MENU** in the front panel. Use the ▼ button to reach **VFILE** submenu, and press **ENTER** to enter it.
2. Use the ▼ button to scroll to **EDIT TARE**. Press **ENTER**. The indicator displays **VEHICLE** briefly, and then the cursor blinks.
3. Use the alphanumeric keypad to enter the truck ID (usually the plate number), and press **ENTER**.



If the ID you entered already exists in memory, the display shows E42: V/CLE
IN W.F.

4. The display shows P.TARE: 00.000. Enter the tare value of the truck and press **ENTER**.
5. The display shows CLIENT briefly, and then the cursor blinks. Enter the customer ID of the truck owner (usually a company name), and press **ENTER**. This is optional – if you don't need to enter customer details, leave this empty and press **ENTER**.
6. The display shows PRODUCT briefly, and then the cursor blinks. Enter a description of the product the truck is carrying, and press **ENTER**. This is optional – if you don't need to enter product details, leave this empty and press **ENTER**.
7. The display shows STORE IN W.M. briefly. This indicates that the V-File record has been saved in memory. You can now weigh this truck without a first weighing.



You may not edit a V-File record. To change the details you entered, delete the record (see chapter 9.4) and create it again.

9.2 Printing from V-File

9.2.1 Printing Truck Tare Values

➔ To print truck tare values for all trucks:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **PRINT** submenu. Press **ENTER** to enter the menu.
3. Use the ▼ button to scroll to the **TARE** option. Press **ENTER**. The printer starts printing all the tare values stored in the V-File, alongside the data of each truck.

9.2.2 Printing All First Weighings

A first weighing is performed when a truck is not stored in the V-File, and its unloaded weight is not known. Together with the second weighing, this allows you to tare the scale. First weighing data is not stored in the regular V-File records (because if a V-File ticket exists there is no need for a first weighing). This data is stored in a separate memory location, and you can print it if needed.

➔ To print all first weighings:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **FIRST** option. Press **ENTER**. The printer starts printing the weight measurements taken in all first weighings (one per line).

9.2.3 Printing the Entire V-File

This option allows you to print all V-File records, including the following details: truck ID, customer ID, product ID, tare value, serial number, date and time.

➔ **To print**

the entire V-File:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **PRINT** option. Press **ENTER** to enter the submenu.
3. Use the ▼ button to scroll to the **ALL** option.
4. Press **ENTER**. The printer starts printing all V-File tickets.



The serial number of a V-File record, which is printed on the ticket, reflects the status of the record. A serial number starting with MT indicates a full V-File record, with first and second weighing information. A serial number starting with MF indicates a first weighing only. A serial number starting with M@ indicates that the record is empty. The number following the two-letter status code indicates the record's position in memory.

9.2.4 Printing the V-File Record of a Specific Truck

➔ **To print the V-File record for a specific truck:**

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **PRINT** option, and press **ENTER**.
3. Use the ▼ button to scroll to the **SELECT** option, and press **ENTER**. The indicator displays **VEHICLE** briefly, and the cursor blinks.
4. Use the alphanumeric keypad to enter the ID of the truck (usually its plate number), and press **ENTER**. The V-File record for the truck prints out.

9.3 Checking V-File Integrity

This performs a check on the vehicle file memory to verify that the memory is not corrupted.

➔ **To check errors in the V-File:**

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **CSUM** option, and press **ENTER**.

3. The display shows **WAIT** . . . while the memory is checked. When the test finishes, one of the following messages is displayed:
 - **CHECKSUM OK** (briefly) indicating that the V-File memory has no errors.
 - **E77:WM CHECKSUM**, indicating that part of the memory is corrupted.
4. If errors were found, you are prompted to correct them. Press **ENTER** to correct the errors, or **CE** to leave the memory as-is.
5. Print the entire V-File (see chapter 0 above). Read the printout to see if it makes sense. If some records seem to be corrupted, delete the entire V-File (see chapter 9.4 below).

9.4 Deleting V-File Records

➔ To delete V-File records:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **DELETE** submenu. Press **ENTER** to enter the menu.
3. Select one of the following menu options:
 - **TARE** – deletes all fixed-tare weighings.
 - **FIRST** – deletes all historic first weighing data.
 - **ALL** – deletes all truck records.
 - **SELECT** – prompts for a vehicle ID, and deletes the record for that truck.
4. The indicator displays **DEL? AE=Y CE=N**.
 - Press **ENTER** to confirm and delete the record/s you specified.
 - Press **ESC** to cancel.

9.5 Checking Available V-File Memory

➔ To check available V-File capacity:

1. Press **MENU** on the front panel. Use the ▼ button to scroll to the **VFILE** menu. Press **ENTER** to enter the menu.
2. Use the ▼ button to scroll to the **SIZE** option, and press **ENTER** to select it.
3. The display shows **USED: xxx FREE: yyy**, where **xxx** is the number of V-File records currently stored and **yyy** is the number of V-File slots available.



When the V-File no longer has any free space, new vehicle information overwrites the existing vehicle information.

10 Communication With External Devices

10.1 Serial Ports Configuration

VT300 has two serial ports, designated port 1 and port 2. Port 1 is an RS232C port. Port 2 is an optional port installed on order, and can be either RS232C or RS485.

10.1.1 RS232C Serial Port

The port is used to connect to serial printers or personal computers.

General	Asynchronous serial ASCII, RS232C standard, full duplex
Protocol	2400 baud, 1 start, 7 data/even parity or 8 data/no parity, 1 stop bit OR transmit only, 9600 baud, 1 start, 7 data/even parity or 8 data/no parity, 1 stop bit
Handshake	DTR BUSY per character for fanfold printers or REQUEST PAPER END STATUS for EPSON TM-295 slip printer.
Connection	Cable gland: stainless steel enclosure or DB9 male on rear panel, aluminum enclosure (J1 or J3). Three-conductor shielded cable, max distance 15m. Tx = Pin 3 Rx/DTR = Pin 2 GND = Pin 5

10.1.2 RS485 Serial Port

Used to connect to a host computer, remote printer, remote display, etc.

General	Asynchronous serial ASCII, RS485 half duplex
Protocol	2400 to 57600 baud, 1 start, 7 or 8 data, 1 Even parity, 1 stop bit.
Connection	Cable gland: stainless steel enclosure or DB9 female on rear panel, aluminum enclosure (J3). Two-conductor twisted-pair shielded cable, max distance 1000m. A termination resistor 120R may be connected by shorting pins 8 and 9. A = Pin 6 B = Pin 7

10.2 Setting Port Output

10.2.1 Setting Port 1 Output

You can use menu path **SYSTEM > SET > 1COM > OPERATION** to determine the output for port 1. The following options are available:

- **TICK 3** – Printer mode. The printer driver is selected using menu path **SYSTEM > SET > 1COM > PRN TYPE**.
- **W.OUT** – continuous weight output. See section 10.3.1.
- **W2OUT** – continuous weight output with dual-scale operation. See the *VT300 Technical Manual*.
- **ALIBI** – transmit alibi memory. See section 10.3.2.
- **NONE** – deactivate the port.
- **9600T** – set baud rate to 9600, transmit only.

10.2.2 Setting Port 2 Output

You can use menu path **SYSTEM > SET > 2COM > OPERATION** to determine the output for port 2. The following options are available:

- **W.OUT** – continuous weight output. See section 10.3.1.
- **W2OUT** – continuous weight output with dual-scale operation. See *VT300 Technical Manual*.
- **A.OUT** – continuous weight output with tare. See section 10.3.2.
- **NONE** – Deactivate the port.
- **EDP** – EDP protocol output. See section 0.
- **R.PRN** – printing data from local printer on remote printer. See chapter 10.3.5.
- **M/S (A-Y)** [A=network address] – participate in a network of several indicators as slave, with this address. Refer to the *VT300 Technical Manual*.

10.3 Output Formats

10.3.1 Continuous Weight Output

Works With Ports

Ports 1, 2 (RS232 or RS485)

Description

Indicated weight and status information is transmitted continuously. No handshake is required. Used mainly for remote display or PC.

Data Block Composition

Byte	Name	Description
1	Weight status	Bit0 0=Normal 1=No weight display
		Bit1 0=Gross 1=Net
		Bit2 0=No Auto zero 1=Auto zero
		Bit3 0=Within range 1=Out of range
		Bit4 0=No standstill 1=Standstill
		Bit5 0=Normal 1=Under minimum weighing range
		Bit6 Must be always set to 1
		Bit7 Zero or parity
2	Polarity	"+" or "-"
3-8	Weight	6 digits, including decimal point if any
9	Sync	Carriage return (0D hex) for end of transmission.

10.3.2 Continuous Weight With Tare

Works With Ports

Ports 2 (RS232 or RS485)

Description

This option can be programmed using setup parameter **SYSTEM > SET > 2COM > OPERATION** to A.OUT. The weight indication of each scale is transmitted continuously along with its current tare and gross weight. The format is:

P+123.45N010.00(T/P)133.45G

Where the characters indicate:

- N for Net weight.
- G for Gross weight.
- T for the Tare weight when the scale was manually tared, or P for the tare weight when the tare was preset either from the device or from a PC.

Data Block Composition

Byte	Name	Description
1	Weight status	Bit 0: 0=Normal 1=No weight display Bit 1: 0=Gross 1=Net Bit 2: 0=No Auto zero 1=Auto zero Bit 3: 0=Within range 1=Out of range Bit 4: 0=No standstill 1=Standstill Bit 5: 0=Normal 1=Under minimum weighing range Bit 6: Must be always set to 1 Bit 7: Zero or parity
2	Polarity	"+" or "-".
3-8	Net weight	6 digits, including decimal point if any.
9	"N"	Indicates that the preceding weight is net.
10-15	Net weight	6 digits, including decimal point if any.
16	"T" or "P"	"T" specifies that the preceding weight is a manual tare. "P" specifies that the preceding weight is a preset tare.
17-22	Gross weight	6 digits, including decimal point if any.
23	"G"	Indicates that the preceding weight is gross.
24	Sync	Carriage return (0D hex) for end of transmission.

When Display Indication is Not Weight

When the indicator displays something other than weight, the data string to COM2 will be as follows:

|A|XXXX|TARE VALUE|T/P|GROSS VALUE|G|CR

"XXXX" in the format above will either be blank spaces, an error message, or the menu currently accessed by the user.

10.3.3 Alibi Transmit

Works With Ports

Port 1 (RS232).

Description

Alibi mode can be set in **SYSTEM > SET > 1COM > OPERATION: ALIBI**. When the **PRINT** key is pressed, the record is transmitted in the following format:

1234 _ 012340kg G

10.3.4 EDP Protocol Output

Works With Ports

Port 2 (RS232 or RS485).

Description

Transmits weight measurements to a host computer, according to the currently-selected print format, with or without an ENQ prompt, and with or without an ACK/NAK handshake (see 'Setup Options' below). The EDP protocol enables communication with two or more indicators connected to the host PC.

Full Protocol Workflow

1. Within 5 seconds of initialization, the PC requests data by sending an ENQ (05 h) command. If it doesn't send an ENQ, the indicator shows Error 30 (host not ready).
2. After the **PRINT** () button is pressed, the indicator transmits weight information according to the currently-selected print format, using the standard data block composition (shown below).
3. Within 5 seconds of transmission, the PC either:
 - Acknowledges receiving the data properly, by sending an ACK (06 h) command.
 - Notifies the indicator the data was not properly received, by sending a NAK (15 h) command.
 - Does not respond, in which case the indicator shows error 33 (host does not acknowledge).
4. If the host responded with a NAK command, steps 2 and 3 are repeated. The number of repeats is unlimited.

Relevant Setup Parameters

- **SYSTEM > 2COM > EDP > ERROR CTRL (YES/NO)** – timeout control. Turning off timeout removes the 5-second constraint in workflow steps 2 and 4. Errors 30 or 33 are never shown.
- **SYSTEM > 2COM > EDP > PROTO A/N (YES/NO)** – handshake. 0=No; 1=Yes. Turning off handshake removes steps 4 and 5 of the protocol workflow - the indicator sends data blocks on demand, without waiting for a response.
- **SYSTEM > 2COM > EDP > DIS. PROTO (YES/NO)** – operator disable. 0=No; 1=Yes. If this option is turned on, an indicator may interrupt the protocol by pressing any key on the indicator keypad.
- **SYSTEM > 2COM > EDP > HOST ENQ. (YES/NO)** – host enquiry. 0=No; 1=Yes. Turning off host enquiry specifies that the indicator should send weight information continuously, not on demand.

Data Block Composition

Character / s	Description
STX (02 h)	Start of transmission.
ASCII (any)	ASCII data identical to the data printed.
ETX (03 h)	End of transmission.
BCC	Block check character (XORSUM of all data characters STX, ETX inclusive).

10.3.5 Remote Printer Output

Works With Ports

Port 2 (RS485 or RS232)

Description

Used to transmit the data printed on the local printer to a remote printer. No handshake is required.

11 Setpoints and Digital Input

The VT300 can interface with weighing automation systems, using two optoisolated outputs (digital setpoints) and one digital input. Only authorized technicians should connect the indicator to other systems in your production environment, using these outputs and inputs.

- The outputs (setpoints) are triggered when the scale reads an upper weight threshold, which you define. There is a separate threshold for each setpoint.
- The digital input is used as a tilt switch. When a signal is received on the input cable, the display locks for a certain period of time. The tilt switch is enabled, and its time delay defined, during setup.

11.1 Technical Specifications

11.1.1 Digital Outputs

- Transistor output open collector positive common.
- 24VDC + 10% / 100mA per output.
- Max off: State voltage 30VDC / leakage 100µA.
- Optoisolated to 2.5 kV.
- Short-circuit protected.
- 2ms maximum delay for both on and off positions.

11.1.2 Digital Input (Tilt Switch)

- 9-24 VDC, positive common optoisolated to 2.5 KV.
- Input resistance 3.3 KΩ.
- 2ms maximum delay for both on and off positions.

11.2 Editing Thresholds for Setpoints

Each setpoint has an upper weight threshold that triggers it. For example, if you set a threshold of 13kg for setpoint 1, nothing will happen as long as the items on the scale weigh less than 13kg. As soon as an item is placed on the scale that weighs exactly 13kg, or more, the setpoint will be switched to on (if normally off) or to off (if normally on).



Setpoints can be activated either by net weight value or by gross weight, depending on how this was defined in setup.



Setpoints can be either normally open or normally closed, depending on how this was defined in setup.

➔ **To edit weight thresholds for a setpoint:**

1. Press **MENU**, then press **ENTER** to enter the **WEIGH** menu.
2. Use the **▼** button to scroll to the **SETP** option. Press **ENTER**.
3. The display shows **SETP1**. Press **ENTER** to select setpoint 1, or press **▼** and **ENTER** (the display shows **SETP2**) to select setpoint 2.
4. The display shows the current threshold for the setpoint you selected.
 - If you don't want to change this threshold, press **ESC**.
 - If you do want to change it, proceed to the next step.
5. Enter a new threshold value using the numeric keyboard, and press **ENTER**.

11.3 Using the Tilt Switch

You can set the time delay for the tilt switch function using the setup parameter **4.t**. Use this parameter to enter the time delay for display lock in 1/10 seconds.

When the contacts close, the display locks after the time delay elapses. When they open again, the display unlocks after the same time delay elapses.

Set **4.t** to **00** to disable the tilt function.

12 Errors and Troubleshooting

When an error or an unexpected event occurs, the indicator displays the message E.X, where X is the error code, followed by a descriptive message. The following table explains all the error codes and suggests what to do when each error message is displayed.

12.1 Hardware and General Errors

Error code & desc.	Possible cause	Actions to be taken
E01: ROM	Faulty ROM chip.	Contact Vishay Transducers.
E02: RAM	Faulty flash RAM.	Contact Vishay Transducers.
E04: EEPROM	Faulty EEPROM. EEPROM memory stores calibration data.	Contact Vishay Transducers.
E05: SC-A/D s1	Scale 1 extremely out of range.	Check scale, cable, connectors, LC excitation, A/D converter. Contact service.
E05: SC-A/D s2	Scale 2 extremely out of range.	Check scale, cable, connectors, LC excitation, A/D converter. Contact service.
E06: LOW VOLT.	Low input voltage (insufficient power).	Check power supplied to the instrument.
E15: PWRUP ZERO	System has been initialized due to power failure or soft reset.	Zero the scale.
E16: W DATE TIME	System not initialized properly, or backup battery failure.	Enter a new date and time using SYSTEM > DATE . Replace battery.

12.2 Printing and EDP Protocol Errors

Error code & desc.	Possible cause	Actions to be taken
E20 :PRN NOT RDY	The printer is offline, because it is either not connected, out of paper or malfunctioning.	Check printer and cables. Replace printer.
E26:NO PAPER	No paper. This error only applies to the EPSON TM295 printer.	Add paper to printer tray.
E30:HOST NOT RDY	The host PC is not online, either because it is not connected or because the communication link failed.	Check computer and cables. Retry.
E33:HOST NOT ACK	The host does not issue a correct response (acknowledgement) to a request from the indicator.	Check computer and cables. Retry.

12.3 Weighing and Counting Errors

Error code & desc.	Possible cause	Actions to be taken
E40:OUT OF MEM. W	Weighing memory full.	Delete unused records or check errors in vehicle file (see chapter 9.3).
E41:INVALID I.D.	No data entered during first weighing.	Enter first weighing data.
E42:V/CLE IN W.F.	A first weighing has already been made for this vehicle.	Retry entry; carry out second weighing; or delete the first weighing from memory.
E43:SCALE TARED	First or second weighing cannot be performed because the scale has been tared.	Cancel tare and return to gross mode.
E44:NEG. WEIGHT	Negative weights cannot be printed.	Retry or abort.
E45:SCALE MOT.	Non stable weights can not be processed.	Wait until the  status annunciator activates, and retry.
E47:OUT OF LIMIT	Weight is out of limits.	Retry.
E50:SAMPLE CNT	The sample used in counting has too few units.	Retry.
E51:SAMPLE WEIGH	The sample used in counting weighs too little.	Retry.

12.4 Alibi Memory and Accumulated Total Errors

Error code & desc.	Possible cause	Actions to be taken
E55:ALIBI FULL	Alibi memory full.	Press ENTER to acknowledge. The unique identification number will reset to 0000.
E56:NO ALIBI	Tare is active, so it is not possible to print.	Printout aborted. Cancel tare by pressing ESC , and retry.
E57:ALIBI CSUM	Alibi memory corrupted.	No action. The alibi memory cannot be cleared, but the next records will be corrected.
E67:TM CHECKSUM	Corrupted accumulated total.	Clear accumulated total (TFILE menu).
E69:TM OVERFLOW	Accumulated total has overflowed because it has not been cleared for a long time.	Clear accumulated total (TFILE menu).
E77:WM CHECKSUM	Corrupted weighing memory.	Use menu path VFILE > DELETE to clear weighing memory.

Appendix A: Setup Parameters and Menus

Access Codes

Option	Description	Set to	Option	Description	Set to
PIN SYS	Service code		PIN OPER	User code	

Calibration Options and Parameters

Menu Option	1CAL	2CAL	Menu Option	1CAL	2CAL
2ND SCALE			A/D AUTO CONV.		
DISP. DIGITS			BATTERY		
DEC. POINT			LEAD Z BLANK		
SCALE DIV			A/D GAIN		
WIGH. RANGE			AC EXC		
DIG. FILTER			ZERO RANGE		
CONV. RATE			DUAL RANGE		
MOTION SAMPLES			PR BELOW MIN		
AUTO Z TRACK			CAL MODE		
INIT ZERO			UNIT SELECT		
DUAL FILTER					
Calibration Param.	Scale	Set to	Calibration Param.	Scale	Set to
Dead Load: C_p	Scale 1		Dead Load: C_p	Scale 2	
Span: C_M	Scale 1		Span: C_M	Scale 2	

Setup Menu: SET > OPER

Menu option	Set to	Menu option	Set to	Menu option	Set to
TOTALISING M		WAIT UNLOAD		BRIGHTNESS	
WEIGHING MEM		1ST W PRINT		DATA FORMAT	
REFER CODE		USER FORMS		AUTO PWR OFF	
CODE MEM		KEY IN TIME			

Setup Menu: SET > 1COM

Menu option	Set to	Menu option	Set to
PARITY/DATA		PRN TYPE	
OPERATION		ERROR CONTROL	

Setup Menu: SET > 2COM

Menu option	Set to	Menu option	Set to
BAUD RATE		M / S A-Y	
PARITY/DATA		EDP (submenu – details below)	
OPERATION			

Setup Menu: SET > 2COM > EDP

Menu option	Set to	Menu option	Set to
ERROR CTRL		DIS. PROTO	
PROTO A/N		HOST ENQ.	

Setup Menu: SET > D/A CAL

Menu option	Set to	Menu option	Set to
CALIBRATION		CURRENT	
SCALE ERROR		RESOLUTION	
OUTPUT		OPERATION	
MODE			

Reference Codes

Code	Set to	Code	Set to
Code 0		Code 3	
Code 1		Code 4	
Code 2			

Setpoint and Input (Tilt) Settings

Setting	Set to	Settings	Set to
Tilt delay (TILT)		SETP GROSS	
Setpoints (SETP)		SETP NC	

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